



Substitute Spec  
#3 (NE)

## SUBSTITUTE SPECIFICATION

### --CONTROL DEVICE (& METHOD) FOR MIXING AND POSITIONING SOUND

#### FIELD OF THE INVENTION

The present invention relates to a control device for mixing and positioning sound, in for example the audio mixing of movie and TV in 5.1 format. Moreover, the multi-audio channel outputs can be performed. Furthermore, the multi-audio channel outputs can be performed for stage performance and other special formats.

#### BACKGROUND OF THE INVENTION

In general, for dramas of TV or movies, the signal are recorded and edited in post production stage for presenting a stereo effect or a sound effect. But for the live show or stage show, in general, the signal must be processed in real time to match the image. The positioning of sound becomes complicate in the live show where many microphones are used. The primary factor for this problem is due to mixing of audio. In general, the mixing of audio is performed manually, and thus at one time, only two microphones are controlled in this method since one hand only controls one panning knob to achieve gradual sound moving.

For a live show, the voice is manually controlled to match the viewpoint of lens of the camera according to the indication of the director. If the lens points to a music instrument, then the voice of said instrument is amplified. However, if the lens moves

rapidly, it is often that the sound can not well match the viewpoint of the lens.

Although current mixing positioning and control ways and the devices of the same are equipped with multi-switches or potential meters, it is confined to a single output channel, double output channels, or multi-double output channels. For example, for five audio channels, only right or left audio channel, or middle audio channel, or left surrounding sound effect or right surrounding effect is controlled. It is impossible that the five audio channels outputs signal at the same time. A balance control is used to control the mixing to the left and right sides. Moreover, a joystick is used in the mixing controller, but there is still logical confusion to control and decide which output channels to go. And for synchronous multiple audio channel control, the mixing becomes very complicate and difficult. It is possible to define a certain mixing way single input to multiple outputs, while it is impossible to define a synchronous variation of multiple-inputs to multiple-outputs. Currently, computers based operation are used for the mixing control, but the control way is indirect. In general, it is suitable for postproduction since at a time, only one action is operated through a computer mouse. Therefore, it is not suitable to be used in a live show.

## SUMMARY OF THE INVENTION

Accordingly, the primary object of the present invention is to provide a control device and method for mixing and positioning sound, wherein the audio mixing of movie and TV 5.1 format. Moreover, the multi-audio channel outputs can be performed. Furthermore, the multi-audio channel outputs can be performed for stage performance and other special formats.

Another object of the present invention is to provide a control device and method for mixing and positioning sound, wherein the positioning of the stereo is matched to the viewpoint of a camera so that the video and audio effect are synchronous.

Another object of the present invention is to provide a control device and method for mixing and positioning sound, wherein to control the output result from the various audio inputs that are processed as various audio positioning mixing.

Another object of the present invention is to provide a control device and method for mixing and positioning sound, wherein sound control is designed to match the movement of an object, the signal of a variety of independent movements are inputted to the different audio channels.

Another object of the present invention is to provide a control device and method for mixing and positioning sound, wherein the main controller selector has a plurality of audio mixing positioning controller for setting the control voice input based on the visual viewpoint or moving objects.

The various objects and advantages of the present invention will be more readily understood from the following detailed description when read in conjunction with the appended drawing.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 and 2 are structural schematic views for the control device for mixing and positioning sound in the present invention.

Fig. 3 is a structural schematic view showing the combination of the input audio and output audio of the preset changing main controller in the present invention.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In order that those skilled in the art can further understand the present invention, a description will be described in the following in details. However, these descriptions and the appended drawings are only used to cause those skilled in the art to understand the objects, features, and characteristics of the present invention, but not to be used to confine the scope and spirit of the present invention defined in the appended Claims.

Referring to Figs. 1 and 2, a schematic view about the method for audio mixing and positioning and a system structure of the device of the same according to the present invention is illustrated. The structure of the present invention includes an input audio channel controller 10, an output audio channel controller 20, and a master controller 30. The input audio channel controller 10 has an input level controller 11 for controlling the amplitude of the audio input to be at the level of the general mixing controller; an input to output controller 12 for setting the combination from the input channel to the output channel; each input is correspondent to at least one output channel; a circuit selector 13 for selecting a certain input to output connection controller 12 to be controlled by a master controller 30, and for setting a separation operation, i.e., setting a certain input to output controller 12 to operate independently without being controlled by any master controller 30.

The output audio channel controller 20 controls the combination of the output channel based on the combination of the input channel to the output channel set by the

input to output controller 12. In each set, the number of the output is correspondent to the number of the combination set by the input to output controller 12. Furthermore, the output audio channel controller 20 directly outputs of the signals from the output channel of each set, outputs will be mixed a second time and output afterward for the main purpose of this invention.

Referring to Fig. 3, a structural schematic view of the controlling combination of the master controller is illustrated. The master controller 30 of the present invention includes a cross fader 31 and a selector 32. The scenes buttons serves for selecting the input to output connection controller 12 of the audio channel under controlled, and after setting, the cross fader 31 serves to operate the transition of the settings of the input channels and output channels.

The most popular format of a general output is 5.1 defined by the film industries. Besides, 7.1 audio channel, even more output ways, can be used, which are used in special cases, for example, stage performance in that all the input channels are assembled to match the required sound emitting points so as to be assembled as a multiple output configuration. In the present invention, the outputs of sound can be arranged based on the viewpoint of visual effect. In that, with the cameras, the positioning of each sound is disposed at a reasonable position, as the viewpoint of image changes, the viewpoint of sound is also changed. The positioning of sound must be designed to match the capturing points of cameras.

For example, in the sound stage, the input points of the music instruments of a musical group, such as violin, viola, cello, flute, oboe, are set to the same control circuit. The positioning of each instruments are set according to the viewpoint to the front of the ensemble as the first preset. The positioning of each instruments are set according to the viewpoints of the violin close-up from to right as the second preset. The positioning of each instruments are set according to the viewpoint of the cello and flute close-up from the left as the third and fourth preset sets. Therefore, when the director chooses the camera viewpoint, the preset sounds are positioned so that the sound of the instruments from the viewpoints are completely matched to a frame. Therefore, the defect of the prior art that the sound emitting position is not matched to the positioning the image will not occur.

In the present invention, if only two preset sets are used, it is only necessary to change the first preset set and the second presets so as to match the corresponding image frames. In the present invention, in the case of four presets being used to match six viewpoints, one set can be selected as a changeable set, while the other three sets are used to match the most frequent three viewpoints. The changeable set is utilized to match the other three viewpoints. Therefore, the present invention can be set with different combination as required so as to control emitted sound to match the requirement of an image.

Besides, the sound control of the present invention can be designed to match the

movement of an object, such as a plane flying over the head, a moving car, etc. In the present invention, the sound of various independent movements can be inputted to the audio channels. Then, unused main controller, for example, second, third, fourth, etc., are selected. Then, each preset sets of these audio channels are set with input start point, passing through point, far away points, ... . If a sound effect process is performed, it is transferred to another one or more audio channels so as to set various preset sets, which uses the same main controller so as to achieve the object of synchronization. If high level sound effect processor, a hidden effect, for example Doppler effect, can be set, thereby, the frequency of a sound can be shifted to a higher or lower frequency based the speed of the object. Setting a passing point, then sound is shifted to the lower frequency. Thereby, a three dimensional sound effect is achieved.

Although the present invention has been described with reference to the preferred embodiments, it will be understood that the invention is not limited to the details described thereof. Various substitutions and modifications have been suggested in the foregoing description, and others will occur to those of ordinary skill in the art. Therefore, all such substitutions and modifications are intended to be embraced within the scope of the invention as defined in the appended claims.--